

Amendments to the Claims

1-10. (Canceled)

11. (New): A method for identifying a selective blocker of a persistent Na^+ channel whereby the method comprises the steps of:

- a) providing a test sample 1 comprising
 - i) a Na^+ -free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K^+ channel, a transient Na^+ channel and a persistent Na^+ channel; and
 - iv) a potential Na^+ channel blocker;
- b) depolarizing membrane of the cell in the test sample 1;
- c) generating a current through the persistent Na^+ channel by adding Na^+ to test sample 1 at least 10 msec after step (b);
- d) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
- e) providing a control sample 1 comprising
 - i) a Na^+ -free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K^+ channel, a transient Na^+ channel and a persistent Na^+ channel;
- f) depolarizing membrane of the cell in the control sample 1;
- g) generating a current through the persistent Na^+ channel by adding Na^+ ions to the control sample 1 at least 10 msec after step (f);
- h) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;
- i) determining the relative emitted fluorescence 1 by comparing the emitted fluorescence from step (d) to the emitted fluorescence from step (h);
- j) providing a test sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K^+ channel and a transient Na^+ channel; and

- iv) a potential Na^+ channel blocker
- k) depolarizing membrane of the cell in test sample 2;
- l) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;
- m) providing a control sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K^+ channel and a transient Na^+ channel;
- n) depolarizing membrane of the cell in control sample 2;
- o) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;
- p) determining a relative emitted fluorescence 2 by comparing the emitted fluorescence from step (l) to the emitted fluorescence from step (o);
- q) comparing the relative emitted fluorescence 1 in step (i) with the relative emitted fluorescence 2 in step (p).

12. (New): The method according to Claim 11, wherein the cell expresses an endogenous persistent Na^+ channel.

13. (New): The method according to Claim 11, wherein the cell expresses an exogenous persistent Na^+ channel.

14. (New): The method according to Claim 13, wherein the cell is HEK-293.

15. (New): The method according to Claim 11, wherein the cell expresses a Type III persistent Na^+ channel.

16. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) is by K^+ addition.

17. (New): The method according to Claim 11, wherein the membrane depolarization of step (f) is by K^+ addition.

18. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) and step (f) is by K^+ addition.

19. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) is by field stimulation.

20. (New): The method according to Claim 11, wherein the membrane depolarization of step (f) is by field stimulation.

21. (New): The method according to Claim 11, wherein the membrane depolarization of step (b) and step (f) is by field stimulation.
22. (New): The method according to Claim 11, wherein the membrane depolarization of step (k) is by field stimulation.
23. (New): The method according to Claim 11, wherein the membrane depolarization of step (n) is by field stimulation.
24. (New): The method according to Claim 11, wherein the membrane depolarization of step (k) and step (n) is by field stimulation.
25. (New): A method for identifying a blocker of a persistent Na^+ channel whereby the method comprises the steps of:
 - a) providing a test sample 1 comprising
 - i) a Na^+ -free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K^+ channel, a transient Na^+ channel and a persistent Na^+ channel; and
 - iv) a potential Na^+ channel blocker;
 - b) depolarizing membrane of the cell in the test sample 1;
 - c) generating a current through the persistent Na^+ channel by adding Na^+ to test sample 1 at least 10 msec after step (b);
 - d) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
 - e) providing a control sample 1 comprising
 - i) a Na^+ -free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K^+ channel, a transient Na^+ channel and a persistent Na^+ channel;
 - f) depolarizing membrane of the cell in the control sample 1;
 - g) generating a current through the persistent Na^+ channel by adding Na^+ ions to the control sample 1 at least 10 msec after step (f);
 - h) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;

- i) comparing the emitted fluorescence from step (d) to the emitted fluorescence from step (h).

26. (New): The method according to Claim 25, wherein the cell expresses an endogenous persistent Na^+ channel.

27. (New): The method according to Claim 25, wherein the cell expresses an exogenous persistent Na^+ channel.

28. (New): The method according to Claim 27, wherein the cell is HEK-293.

29. (New): The method according to Claim 25, wherein the cell expresses a Type III persistent Na^+ channel.

30. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) is by K^+ addition.

31. (New): The method according to Claim 25, wherein the membrane depolarization of step (f) is by K^+ addition.

32. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) and step (f) is by K^+ addition.

33. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) is by field stimulation.

34. (New): The method according to Claim 25, wherein the membrane depolarization of step (f) is by field stimulation.

35. (New): The method according to Claim 25, wherein the membrane depolarization of step (b) and step (f) is by field stimulation.

36. (New): A method for identifying a selective blocker of a persistent Na^+ channel whereby the method comprises the steps of:

- a) providing a test sample 1 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K^+ channel and a persistent Na^+ channel wherein a resting membrane potential of the cell is approximately halfway between an equilibrium potential of Na^+ and an equilibrium potential of K^+ ;
- b) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
- c) adding a potential Na^+ channel blocker to test sample 1;
- d) detecting fluorescence emitted by the voltage-sensitive dye in the test sample 1;

- e) determining a relative emitted fluorescence 1 by comparing the emitted fluorescence from step (b) with the emitted fluorescence from step (d);
- f) providing a test sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K⁺ channel and a transient Na⁺ channel; and
 - iv) a potential Na⁺ channel blocker
- g) depolarizing membrane of the cell in test sample 2;
- h) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;
- i) providing a control sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K⁺ channel and a transient Na⁺ channel;
- j) depolarizing membrane of the cell in control sample 2;
- k) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;
- l) determining a relative emitted fluorescence 2 by comparing the emitted fluorescence from step (h) relative to an emitted fluorescence from step (k);
- m) comparing the relative emitted fluorescence in step (e) with the relative emitted fluorescence in step (l).

37. (New): The method according to Claim 36, wherein the resting membrane potential of the cell is between -40 mV and -20 mV.

38. (New): The method according to Claim 36, wherein the membrane depolarization of step (g) is by field stimulation.

39. (New): The method according to Claim 36, wherein the membrane depolarization of step (j) is by field stimulation.

40. (New): The method according to Claim 36, wherein the membrane depolarization of step (g) and step (j) is by field stimulation.

41. (New): A method for identifying a blocker of a persistent Na⁺ channel whereby the method comprises the steps of:

- a) providing a test sample 1 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K⁺ channel and a persistent Na⁺ channel wherein a resting membrane potential of the cell is approximately halfway between an equilibrium potential of Na⁺ and an equilibrium potential of K⁺;
- b) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
- c) adding a potential Na⁺ channel blocker to test sample 1;
- d) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;
- e) comparing the emitted fluorescence from step (b) with the emitted fluorescence from step (d).

42. (New): The method according to Claim 41, wherein the resting membrane potential of the cell is between -40 mV and -20 mV.

43. (New): A method for identifying a selective blocker of a persistent Na⁺ channel whereby the method comprises the steps of:

- a) providing a test sample 1 comprising
 - i) a Cl⁻-free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K⁺ channel and a persistent Na⁺ channel wherein a K⁺ conductance of the K⁺ channel is at least 50-fold higher than a Na⁺ conductance from the persistent Na⁺ channel; and
 - iv) a potential Na⁺ channel blocker;
- b) depolarizing membrane of the cell with a Na/K pump blocker to the test sample 1;
- c) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
- d) providing a control sample 1 comprising
 - i) a Cl⁻-free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and

- iii) a cell having a K⁺ channel and a persistent Na⁺ channel wherein a K⁺ conductance of the K⁺ channel is at least 50-fold higher than a Na⁺ conductance from the persistent Na⁺ channel;
- e) depolarizing membrane of the cell with a Na/K pump blocker to the control sample 1;
- f) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;
- g) comparing the emitted fluorescence from step (c) to the emitted fluorescence from step (f);
- h) providing a test sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye;
 - iii) a cell having a K⁺ channel and a transient Na⁺ channel; and
 - iv) a potential Na⁺ channel blocker
- i) depolarizing membrane of the cell in test sample 2;
- j) detecting the fluorescence emitted by the voltage-sensitive dye in test sample 2;
- k) providing a control sample 2 comprising
 - i) a physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K⁺ channel and a transient Na⁺ channel;
- l) depolarizing membrane of the cell in control sample 2;
- m) detecting the fluorescence emitted by the voltage-sensitive dye in control sample 2;
- n) comparing the emitted fluorescence from step (j) relative to an emitted fluorescence from step (m);
- o) comparing the difference in step (g) with the difference in step (n).

44. (New): The method according to Claim 43, wherein the Na/K pump blocker is ouabain.

45. (New): A method for identifying a blocker of a persistent Na⁺ channel whereby the method comprises the steps of:

- a) providing a test sample 1 comprising

- i) a Cl⁻-free physiological buffer;

- ii) a voltage-sensitive fluorescence dye;
- iii) a cell having a K⁺ channel and a persistent Na⁺ channel wherein a K⁺ conductance of the K⁺ channel is at least 50-fold higher than a Na⁺ conductance from the persistent Na⁺ channel; and
- iv) a potential Na⁺ channel blocker;

- b) depolarizing membrane of the cell with a Na/K pump blocker to the test sample 1;
- c) detecting fluorescence emitted by the voltage-sensitive dye in test sample 1;
- d) providing a control sample 1 comprising
 - i) a Cl⁻-free physiological buffer;
 - ii) a voltage-sensitive fluorescence dye; and
 - iii) a cell having a K⁺ channel and a persistent Na⁺ channel wherein a K⁺ conductance of the K⁺ channel is at least 50-fold higher than a Na⁺ conductance from the persistent Na⁺ channel;
- e) depolarizing membrane of the cell with a Na/K pump blocker to the control sample 1;
- f) detecting fluorescence emitted by the voltage-sensitive dye in the control sample 1;
- g) comparing the emitted fluorescence from step (c) relative to the emitted fluorescence from step (f).

46. (New): The method according to Claim 45, wherein the Na/K pump blocker is ouabain.